Patent Claims:

1. Method for the measurement of the relative speed (v) of an object, in which the object separation (d(i)) of the object is determined cyclically respectively after expiration of a prescribed cycle period (Tc) and the number (z) of the cycles is determined, within which the object separation (d(i)) is changed so far that a prescribed separation band (ΔX) is completely traversed, and in which the relative speed (v) of the object is calculated from the difference (Δd) between the object separation (d(m)) determined before the entry into the separation band (ΔX) and the object separation (d(n+1) determined after the exit out of the separation band (ΔX) and from the determined number (z) of the cycles.

2. Method according to claim 1, characterized in that the measurement of the relative speed is ended and started anew, if, in a certain number (Emax), of successive cycles, separation values are determined as object separation (d(i)), that differ from the respective preceding separation value by more than a prescribed threshold value (ds).

3. Method according to claim 1 or 2, characterized in that a determined speed value (v) is observed unchangeably so long until the object separation (d(i)) determined in a cycle

increases relative to the object separation determined in the preceding cycle.

4. Method according to one of the preceding claims, characterized in that the object separation (d(i)) determined in a cycle is determined through measurement of the pulse transit time (te) of a light pulse emitted into a measurement space and reflected back out of the measurement space.

5. Method according to claim 4, characterized in that, for the measurement of the pulse transit time (te) of the emitted and back-reflected light pulse, a reception time point (tr) is determined as time point of the reception of the back-reflected light pulse, in that the back-reflected light pulse is detected for the generation of a reception signal (R), and a time point (tr) corresponding to the center of gravity point of the reception signal (R) is determined as reception time point (tr) of the back-reflected light pulse.

6. Method according to claim 5, characterized in that the maximum (rm) of the reception signal (R) is determined, and in that only a time range (ta) of the reception signal (R) lying about the maximum (rm) is used as a basis for the determination of the reception time point (tr) of the back-reflected light pulse.

7. Method according to claim 6, characterized in that the reception time point (tr) of the back-reflected light pulse is determined only when the maximum (rm) of the reception signal (R) lies above a prescribed noise level (rn).

8. Method according to claim 7, characterized in that the reception signal (R) or the time range (ta) of the reception signal (R) used as a basis for the determination of the reception time point (tr) is reduced by a prescribed noise portion before the determination of the reception time point (tr).

9. Method according to one of the claims 4 to 8, characterized in that a temperature compensation is carried out for the reduction of temperature dependent interference components out of the pulse transit time (te).

10. Method according to one of the claims 4 to 9, characterized in that light pulses are emitted into various different spatial sections of the measurement space respectively representing a channel, and in that the back-reflected light pulses are evaluated in a channel-referenced manner.

11. Use of the method according to one of the preceding claims for the recognition of an imminent collision of a vehicle with an object approaching the vehicle.